**Build the Solar System**

Scientists often use models to demonstrate ideas or theories that are difficult to see with our eyes. Today you will be scientists who are responsible with creating a model of the solar system.

**Your task:** In groups of 9 (one per planet, plus the sun) or 8 (one per planet, use a fixed point as the sun), you must accurately and precisely demonstrate the scale of the solar system. On the back of this page you have the actual data for the distances between the Sun and the planets. Using this data, and knowing the limits of space we have available, it is your task to a) come up with a scale we will use to represent actual distances, b) calculate all distances using this scale, and c) create your human model of the solar system.

**Scales:** A scale is used in drawings, maps and models to represent bigger or smaller distances than the model is showing. For example, if you were to create a scale model of Toronto, you might choose to have 1 cm in your model represent 1 km in actual Toronto. Then, if you wanted to show the distance from Riverdale to Donlands Station (about 1.5 km), you would measure it out as 1.5 cm. If you used a smaller scale, maybe 1 mm would equal 1 km, and then that same distance in our model would be represented by 1.5 mm.

**AU (Astronomical Units):** A distance measurement used in space to represent the distance between the Sun and the Earth. All other astronomical distances can then be expressed in AU instead of km. 1 AU = 149.6 million km (149 600 000 km) – almost 4000 trips around the world!

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| **TOTAL DISTANCE USED** | **TOTAL DISTANCE REPRESENTED** | **SCALE CHOSEN** |
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SCALE:

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| --- | --- | --- | --- | --- |
| **PLANET** | **ACTUAL DISTANCE FROM SUN** | **SCALE DISTANCE FROM SUN** | **ACTUAL DISTANCE FROM NEIGHBOURS** | **SCALE DISTANCE FROM NEIGHBOURS** |
| **Mercury** | 0.39 AU  57.9 million km |  |  |  |
| **Venus** | 0.723 AU 108.2 million km |  |  |  |
| **Earth** | 1 AU 149.6 million km |  |  |  |
| **Mars** | 1.524 AU 227.9 million km |  |  |  |
| **Jupiter** | 5.203 AU 778.3 million km |  |  |  |
| **Saturn** | 9.539 AU 1,427.0 million km |  |  |  |
| **Uranus** | 19.18 AU  2,871.0 million km |  |  |  |
| **Neptune** | 30.06 AU 4,497.1 million km |  |  |  |
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